

External Technical Review Summary

United States Department of Energy Office of Environmental Management (DOE-EM)

External Technical Review of the Disposal Practices at the Savannah River Site

Why DOE-EM Did This Review



Disposal operations have been ongoing at the Savannah River Site (SRS) for over 50 years. Active disposal in E-Area, is near the center of the site.

Although a wide range of wastes are being managed at the SRS, only low level radioactive wastes (LLRW) are disposed of on site. Wastes are disposed of in unlined slit and engineered trenches, and in low activity waste and intermediate level vaults. Some wastes are isolated in place with grout and all wastes will be covered with a cap that includes a hydraulic barrier to limit precipitation infiltration. *The objective of this review was to evaluate the disposal facility design, operations, and management versus performance objectives, DOE lessons learned, and cost effectiveness.*

What the ETR Team Recommended

1. Actual or prototypical trenches should be instrumented to determine volumetric and mass fluxes. The fluxes should also be estimated by inverse modeling using plume data from legacy disposal units and compared to Performance Assessment (PA) values.
2. Field testing in prototypical trenches should be conducted to determine: the adequacy of dynamic compaction in stiffening the waste and in controlling long term total and differential settlements, the potential for long-term settlements to impact the final cover, the hydrological performance of the final cover, and the liquid flux from the base of the unlined trenches with and without the final cover.

3 The following SRS disposal practices should be considered for use at other DOE disposal facilities: (a) SRS's long-term stabilization strategy for managing waste settlement, including the use of temporary geomembrane covers. (b) SRS's Waste Information Tracking System (WITS) , a tool for tracking and management of LLRW disposed of on-site, should be adapted or developed for general use in the DOE complex. (c) A complex-wide program based on SRS's Groundwater Modeling Consistency Team would reduce ambiguity and increase confidence in modeling predictions made for DOE sites

What the ETR Team Found

The Independent Technical Team found no immediate concerns with operations at SRS that could result in issues similar to those at Hanford's Environmental Restoration Disposal Facility (EDRF). SRS waste disposal operations are consistent with the PA and good relationships exist with the regulatory agency. The operating contractor continues to identify technical issues that may affect disposal operations and to address issues using accepted engineering methods and practices.

SRS uses a performance-based approach which allows a strategy of controlled release of contaminants from the slit and engineered trenches that is fundamentally different from total containment. The SRS approach requires understanding of the interaction of the disposal system, the waste and the local environment. The PA addresses the impact of the trenches on ground water and SRS also has a vadose zone monitoring system in place to monitor radionuclides between the facility and the ground water. The limited available data was the basis for the testing recommended by the team. The SRS performance based approach has led to the good practices recommended above for application throughout the DOE complex.

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The purpose of an External Technical Review (ETR) is to reduce technical risk and uncertainty. ETRs provide pertinent information for DOE-EM to assess technical risk associated with projects and develop strategies for reducing the technical risk and to provide technical information needed to support critical project decisions. Technical risk reduction increases the probability of successful implementation of technical scope. In general, ETRs assesses technical bases, technology development, and technical risk identification and handling strategies.



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